

The Science of Investing



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11TH AUGUST 2020

WEBINAR TAKEAWAYS

01 The Starting Line Up

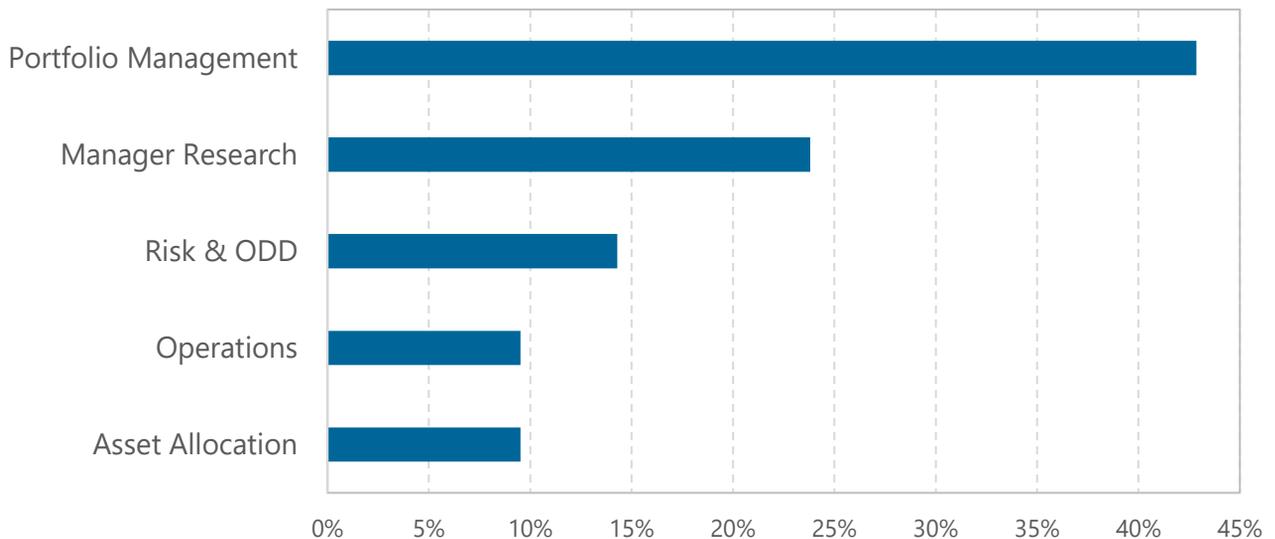
- **The Data Science Business Case:** The explosion of data has made it a necessity to invest in this space; ironically the technology adoption has not kept pace. The business case for a successful data science strategy revolves around scalability with automation, smart governance for investment portfolios, and agreement on the objective function.
- **Building a Data Science Team:** When starting out, it's important to build a small but high performing team with core functions:
 - a. Data engineers: to help with data ingestion and curation of internal and external data sets.
 - b. Subject matter experts: who are also technologists, as they have an understanding of what can and can't be done with existing technologies. The SMEs can also help think creatively about problem sets and marry it with a modeling framework.
 - c. Data modelers: can help convert concepts into frameworks, can apply the right models and are aware of the shortcomings of a model. Sometimes SMEs and Modelers can be the same people.
 - d. Cloud engineers: can help deploy models and scale insights for consumption by the audience.
 - e. Data visualization: can put insights together which are attractive and coherent. They can help build advocacy by storytelling using data-driven insights.

02 Applications in Asset Allocation, Manager Selection, and Governance

- Research from Marat Molyboga and Marcos Lopez de Prado is a good resource to leverage for **asset allocation** models that don't depend on inverting the covariance matrix.
- The holy grail for **manager selection** is the expectation that machine learning algorithms can pick the best funds. This has seen disappointing outcomes as signal to noise ratio is high and the stability of signals is poor. Instead, objective function around replication of a particular fund selection behavior adjusted for biases would be successful.
- The biggest bang for the buck for machine learning models is in **governance and compliance**. As an example, if you have 15 portfolios, each with 25 investments, and if you need to track 10 metrics per investment, you are looking at 3,750 metrics to track. A high RoI outcome would be to add prioritization in monitoring, anomaly detection systems, and smart-alert frameworks.

03

POLL: Which teams are dominant beneficiaries of a data strategy?



04

Industry Data Needs

- Outside of high frequency economic and pricing data, **timeliness** becomes much more of an issue for the investment management industry.
- In **public markets**, while data is available, sourcing of new investment opportunities involves manually scanning the entire universe to create a target rich environment, which is not scalable without technology.
- Well curated datasets are not easily available for **private markets**. Collection of timely information is a non-trivial task, and doing even a simple analysis at scale can be quite challenging.
- **ESG data availability** is a challenge as the datasets do not exist. When surveying asset managers to create these datasets, it's important to structure questionnaires to ensure results are suitable for downstream analysis.
- For **internally curated and labeled data**, the time series may not be continuous because of the change in methodology and objectives.
- For each investor, datasets tend to be **proprietary**, inhibiting the sharing of internal data with other industry participants.

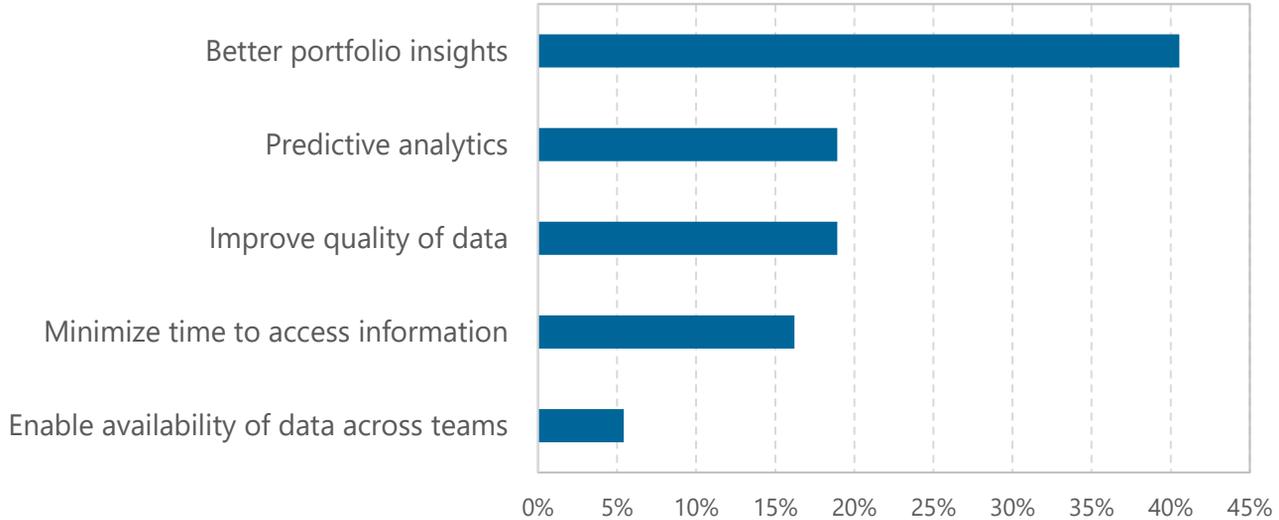
05

Structured vs. Unstructured Data

- The industry struggles with significantly greater amounts of unstructured data than structured data. Examples includes notes and documents which can benefit from **text summarization algorithms** such as GPT-2/3.
- Managing unstructured data presents big opportunities to inject scale in the business.

06

Poll: Why is structured data important for your investment office?



07

Execution and Infrastructure

- Leverage affordable and easy to use **cloud infrastructure** including AWS, Azure, and Google Cloud.
- Beware of the **App trap**. Not everything needs a new app when a simple solution can serve just as well. Just building an app is not the end answer because even then it will require maintaining, deploying, servicing, UX, and programming to ensure success and meet the SLA promise.

08

Keeping It Simple

- Maximize **reusable frameworks** and data models instead of building and maintaining everything from scratch.
- Leverage technology that helps **gather and process information**; and then have human intelligence turn that into insights.
- Improve your governance on portfolios by focusing on prioritization and using frameworks in your monitoring. An example: Instead of reviewing managers linearly or alphabetically quarter after quarter, you can find that you may want to **prioritize** them based on performance or anomalies.
- Treat your asset managers as your data partners, in getting access to **structured, clean data** in an automated fashion.

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